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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/735,954

12/15/2003

Frederick S. Kaufmann

11223

3405

7590

11/03/2006

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EXAMINER

MOFIZ, APU M

ART UNIT

PAPER NUMBER

2165

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/735,954

Applicant(s)

KAUFMANN ET AL.

Examiner

Apu M. Mofiz

Art Unit

2165

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments submitted on 08/31/2006 with respect to claims 1-26 have been reconsidered but are not deemed persuasive for the reasons set forth below.

Examiner's Responses to Applicant's Remarks are listed below:

2. Applicant argues (under REMARKS section) that, Chen does not disclose:

(a) "identifying a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the processing unit and a portion of memory"

(b) "instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row"

(c) "receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit"

(d) "receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row"

(e) "identifying a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the identified processing unit and a portion of memory"

(f) "instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject row."

(g) "computer program ... including executable instructions that cause a computer to ... instruct a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row"

(h) "receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit."

(i) "a computer program ... including executable instructions that cause a computer to ... receive a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit"

(j) "receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row"

(k) "a process including ... identifying a CPU to receive the transition table row and triggered action of the trigger based on a data storage facility to which the identified CPU provide access"

All of the above arguments point out that an operation (e.g., update, delete, insert etc.) on a subject table row (i.e., a row trigger) cause a trigger to be activated (i.e., a

triggering statement is executed) and a transition table, which includes a transition table row (i.e., a table which captures the value(s) that is (are) used to update the row(s) in the subject table when the triggered action is applied to the database) is used to capture the changed row (i.e., the value(s) associated with the subject table row). A processing unit (i.e. a CPU) is identified to receive the transition table row to be processed.

Examiner respectfully disagrees. The following are some simple definitions:

Transition Table (According to IBM DB2 documentation): Specifies the name of the table, which captures the value that is used to update the rows in the database when the triggered action is applied to the database.

Database Trigger (According to Wikipedia): A database trigger is procedural code that is automatically executed in response to certain events on a particular table in a database. There are two classes of triggers; they are either "row triggers" or "statement triggers". With row triggers you can define an action for every row of a table, while statement triggers can occur only once per INSERT, UPDATE, or DELETE statement.

Distributed parallel Database System Architecture (According to DeWitt et al. The Future of High Performance Database Processing, 1992): This architecture is based on a shared-nothing hardware design in which processors communicate with one another only by sending messages via an interconnection network. In such systems, tuples of

each relation in the database are partitioned (declustered) across disk storage units attached directly to each processor. Such architectures were pioneered by Teradata in the late seventies and by several research projects. This design is now used in Teradata, Tandem, NCR, Oracle-nCUBE, and several other products currently under development. In a shared disk multiprocessor system, each processor has a private memory, but has direct access to all disks.

Therefore according to the definitions above a distributed parallel database management system (e.g., Oracle, Teradata, IBM DB2 etc.) executing a triggered statement using a transition table to capture the value that is used to update the subject table row in the database when the triggered action is applied to the database. The table(s) or row(s) are partitioned across multiple disks, wherein the disk(s) are attached directly to the processors. Therefore if Table AB row is divided into disk A (and attached processor A) and disk B (and attached processor B) and an UPDATE on the table AB row triggers an event, the transition table would capture the new values and a processor has to be identified (i.e., a disk/memory portion and the associated processor has to be identified, which stores the relevant portion of the table row that needs to be updated) to process the UPDATE (if a disk does not have the portion of the table that needs to be updated there is no point in going to that disk). All of the “receiving triggered statement”, “determining triggered statement”, “computer program”, “executing triggered statement” are all inherent characteristics of any database management system. Without receiving, determining and executing, a triggered statement can't be processed. Identifying a

processor to process an event (e.g., UPDATE, DELETE etc.) is inherent to a distributed parallel database system, where data is distributed/partitioned among different portions of memory (e.g., different disks), because simply there is no need to access other portions of memory when the other memory portions do not have the corresponding data that needs to be processed. Identifying a processor is done at the database management system level and not at the user level.

Chen teaches "The system, method and program of this invention is applicable to any type of database management system whether it is contained within a single system or is within a networked environment including **parallel processing** systems, client/server processing systems, **distributed** systems, etc. Although the invention herein is described in reference to relational database management systems ... adaptable to other database management systems ... the system, method and program of this invention is also applicable to triggers. For example, it has been proposed that in a future release of the IBM DB2 Common Server that the standard trigger declaration be extended to allow the access of transition tables in the trigger body written in external host languages as well as the SQL language. (col 5, lines 49-67) ...

```
CREATE TRIGGER fuh.mytrig
    AFTER UPDATE OF c1, c2 ON fuh.mytbl
    REFERENCE NEW_TABLE AS nt
        OLD_TABLE AS ot
    FOR EACH STATEMENT
    MODE DB2SQL
```

BEGIN

...

END

Transition tables are created and populated in the executable plan for triggering SQL operation. Let the table fuh.mytbl consist of five rows, {(1,100), (2,10), (3, -1001), (4,331), (5, -5)}, and fuh.mytrig be the trigger as shown in the previous example ... UPDATE fuh.mytbl SET c2=-c2 WHERE c2<0 will render the transition tables nt and ot to be created and populated with the following rows. nt={{(3,1001), (5,5)} ot= {(3, -1001), (5, -5)}}” (col 12, lines 22-52) The preceding text excerpts clearly indicate that a query setting the c2 to -c2, where c2<0 in the subject table fuh.mytbl would activate the trigger fuh.mytrig and within the trigger, transition table nt would be populated by the affected rows of the subject table (i.e., values associated with the subject table row). The transition table row needs to be written to the actual table after the trigger is executed. Now in distributed parallel database system (the Chen method can be implemented in such a system), if the associated actual affected data corresponding to the new data is stored in a particular disk storage/portion of memory (and the associated second processor/CPU), the database management system identifies that particular second processor and sends the transition table data to that processor to be processed and such characteristics is fundamental to any distributed parallel database system e.g., Teradata, IBM DB2, Oracle etc. Examiner is not sure what the Applicant is claiming. Applicant seems to claim a fundamental characteristic of a database system, which exists for decades (According to Dewitt since seventies). Examiner sincerely believes the above

explanation answers all of the arguments raised by the Applicant. All of those arguments are essentially same thing in varying terminologies.

Any other arguments by the applicant are more limiting or irrelevant than the claimed language.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al., (U.S. Patent No. 5,930,795 and hereinafter referred to as Chen).

As to claims 1,4,7,9,11,14,17,19 and 21, Chen teaches a method for processing a trigger associated with a subject table in a relational database, wherein the trigger defines a triggering statement and one or more triggered actions, the method including: determining that a triggering statement of a trigger will execute on a subject table row of a subject table (col 5, lines 50-54, lines 60-67; col 12, lines 25-67; col 13, lines 1-5; col 14, lines 8-50); requesting a transition table in response to determining that the triggering statement will execute, the transition table including a transition table row, wherein the transition table row comprises at least one value associated with the

subject table row (col 5, lines 50-54, lines 60-67; col 12, lines 25-67; col 13, lines 1-5; col 14, lines 8-50); reading the transition table row from the transition table (col 5, lines 50-54, lines 60-67; col 12, lines 25-67; col 13, lines 1-5; col 14, lines 8-50); identifying a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the identified processing unit and a portion of memory; and transmitting the transition table row and the triggered action to the identified processing unit to be processed (i.e., in a parallel processing environment, the different processors process different activities; for a particular job a processor has to be identified to perform the job.) (col 5, lines 50-54, lines 60-67; col 12, lines 25-67; col 13, lines 1-5; col 14, lines 8-50).

As to claims 2-3, 5-6, 8, 10, 12-13, 15-16, 18, 20,22, 23 and 24-26, the limitations of these claims are either addressed or rejected in the claim above or in the explanation in the Examiner's response to the Applicant's remarks.

Conclusion

5. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

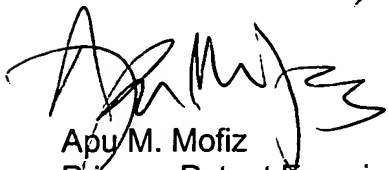
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Points of Contact

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Apu M. Mofiz whose telephone number is (571) 272-4080. The examiner can normally be reached on Monday – Thursday 8:00 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached at (571) 272-4146. The fax numbers for the group is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.



Apu M. Mofiz
Primary Patent Examiner
Technology Center 2100

November 01, 2006